

CANADIAN BOARD OF EXAMINERS FOR PROFESSIONAL SURVEYORS

| C12 - HYDROGRAPHIC SURVEYING | | October 2018 | |
|---|--|---------------------|---------------|
| Note: This examination consists of 12 questions on 1 page. | | Marks | |
| <u>Q. No</u> | <u>Time: 3 hours</u> | <u>Value</u> | <u>Earned</u> |
| 1. | Why is it critical that a hydrographic surveyor know the speed of sound in water? | 5 | |
| 2. | Name the three ocean parameters that effect sound velocity in the ocean. | 5 | |
| 3. | Which parameter from question 2 has the greatest effect in the lower (towards bottom) region? Explain why. | 5 | |
| 4. | Why is it necessary to apply pitch and roll observations to narrow-angle single beam transducers and not wide-angle single beam transducers, under normal survey conditions? Use a diagram in your answer. | 10 | |
| 5. | Why would you mount a single beam transducer on a towed body? | 5 | |
| 6. | With the help of a diagram, describe the components necessary for reducing water depth measurements from a singlebeam transducer to a chart datum. | 10 | |
| 7. | When using SSS, what factors must be considered when estimating across-track resolution? | 5 | |
| 8. | Compare and contrast fixed vessel mounted and towed SSS operations. Provide an example for each method and explain your reasoning. | 10 | |
| 9. | Specific to hydrographic applications, describe the difference between Multibeam Sonars and Side Scan Sonars. Include a discussion of what each would be used for and why. | 10 | |
| 10. | What is a bathymetric surface and how is it derived from survey measurements? | 5 | |
| 11. | What IHO S-44 specification would you recommend for a harbour survey? Why? | 10 | |
| 12. | You are planning a hydrographic survey for a bridge over a river. What information would you collect and what equipment would you use? What would you use for the vertical datum and how would you establish it? | 20 | |
| Total | | 100 | |